What is claimed is:

[Claim 1] 1. An antifuse structure comprising:

a fin having a center portion and end portions,

wherein said center portion of said fin comprises a substantially non-conductive region adapted to permanently become a conductor when heated above a predetermined temperature,

wherein said end portions comprise conductors.

[Claim 2] 2. The antifuse in claim 1, wherein said center portion of said fin comprises an amorphous material.

[Claim 3] 3. The antifuse in claim 1, wherein said center portion of said fin is approximately 10 times more conductive after being heated above said predetermined temperature when compared to a conductivity level of said center portion before heating.

[Claim 4] 4. The antifuse in claim 1, wherein said center portion comprises less than approximately 10 percent of the length of said fin.

[Claim 5] 5. The antifuse in claim 1, wherein said center portion comprises amorphous silicon before being heated above said predetermined temperature and comprises polycrystalline silicon after being heated above said predetermined temperature.

[Claim 6] 6. The antifuse in claim 1, wherein said end portions comprise silicide regions of said fins.

[Claim 7] 7. The antifuse in claim 1, wherein said fin has a height and length that exceeds more than 2 times a width of said fin.

[Claim 8] 8. An antifuse structure comprising:

a fin having a center portion and end portions,

wherein said center portion of said fin comprises a P-N junction adapted to permanently change characteristics when heated above a predetermined temperature,

wherein said end portions comprise a P-type end and an N-type end.

[Claim 9] 9. The antifuse in claim 8, wherein said center portion of said fin comprises an amorphous material.

[Claim 10] 10. The antifuse in claim 8, wherein said center portion of said fin is has an ideality factor of about one after being heated above said predetermined temperature when compared to ideality factor of about two before heating.

[Claim 11] 11. The antifuse in claim 8, wherein before said center portion of said fin is heated, said center portion of said fin has a reverse-bias leakage that is more than 100 times higher than a reverse-bias leakage after said center portion of said fin is heated above said predetermined temperature.

[Claim 12] 12. The antifuse in claim 8, wherein said center portion comprises amorphous silicon before being heated above said predetermined temperature and comprises polycrystalline silicon after being heated above said predetermined temperature.

[Claim 13] 13. The antifuse in claim 8, wherein said end portions comprise oppositely doped regions of said fins.

[Claim 14] 14. The antifuse in claim 8, wherein said fin has a height and length that exceeds more than 2 times a width of said fin.

[Claim 15]

15. A method of forming an antifuse structure, said method comprising:

forming a material layer;

patterning said material layer into a fin;

converting a center portion of said fin into a substantially non-conductive region; and

converting end portions of said fin into conductors;

wherein said process of converting said center portion of said fin into a substantially non-conductive region allows a subsequent process of heating said fin above a predetermined temperature to convert said substantially non-conductive region into a conductor.

[Claim 16] 16. The method in claim 15, wherein said process of converting said center portion of said fin into a substantially non-conductive region comprises:

masking ends of said fin such that a center portion of said fin is unprotected; and

implanting ions into said center portion of said fin.

[Claim 17] 17. The method in claim 15, wherein said process of converting said center portion of said fin into a substantially non-conductive region changes said center portion of said fin into an amorphous material.

[Claim 18] 18. The method in claim 15, wherein said process of converting said center portion of said fin into a substantially non-conductive

region changes said center portion into amorphous silicon and said heating of said fin changes said center portion of said fin into polycrystalline silicon.

[Claim 19] 19. The method in claim 15, wherein said process of converting said end portions of said fin into conductors comprises:

protecting said center portion of said fin; and

siliciding said end portions of said fin.

[Claim 20] 20. The method in claim 15, wherein said heating of said fin changes a conductivity level of said center portion of said fin to be approximately 10 times more conductive after being heated above said predetermined temperature when compared to a conductivity level of said center portion before heating.

[Claim 21] 21. A method of forming an antifuse structure, said method comprising:

forming a material layer;

patterning said material layer into a fin;

converting end portions of said fin into a P-type end and an N-type end;

converting a center portion of said fin into a P-N junction; and

wherein said process of converting said center portion of said fin into said P-N junction allows a subsequent process of heating said fin above a predetermined temperature to permanently change characteristics of said P-N junction.

[Claim 22] 22. The method in claim 21, wherein said process of converting said center portion into a P-N junction comprises:

masking ends of said fin such that a center portion of said fin is unprotected;

implanting ions into said center portion of said fin; and

after said process of converting said end portions of said fin, heating said fin sufficiently to drive impurities from said ends of said fin into said center of said fin.

[Claim 23] 23. The method in claim 22, wherein said process of implanting ions into said center portion of said fin changes said center portion of said fin into an amorphous material.

[Claim 24] 24. The method in claim 21, wherein said process of converting said end portions of said fin into conductors comprises:

protecting said center portion of said fin;

protecting said N-type end and implanting P-type impurities into said P-type end; and

protecting said P-type end and implanting N-type impurities into said N-type end.

[Claim 25] 25. The method in claim 24, wherein said N-type impurities and said P-type impurities comprise opposite type impurities.

[Claim 26] 26. The method in claim 21, wherein said heating of said fin changes mid-gap density of states of said center portion of said fin to be approximately 100 times lower than mid-gap density of states of said center portion of said fin before heating .